

# Golden eagle

## *Aquila chrysaetos*

### Status

Amber listed: SPEC 3 (R)  
Schedule 1 of WCA 1981  
Annex I of EC Wild Birds Directive

### National monitoring

National surveys: 1982, 1992, 2002 (RSPB/SNH).  
Raptor Study Groups may be coordinating monitoring in your area; contact them to find your nearest regional co-ordinator.

### Population and distribution

In the UK, golden eagles breed throughout the uplands of Scotland and at a site in northern England. No birds breed in Ireland. In the last few decades there have been some modest changes in the species' breeding distribution (88–91 *Atlas*), although its population is remarkably stable. The greatest threats to golden eagles in Britain today are the persecution of adult birds and human interference at nests, including egg-collecting (*Birds in Europe*). There are an estimated 420 breeding pairs of golden eagle in Britain (Green 1996).

### Ecology

Breeding habitat is mainly mountainous upland. Eyries are usually on ledges or in hollows of rock faces. In Scotland, nest heights range from 16 m to 900 m above sea-level. Generally, golden eagles will avoid inland waters, wetlands and dense forests, preferring open areas with rough grass moors and smooth grassland, especially slopes or plateaux allowing a wide view and use of air currents. Perches are on crags, trees or other suitable look-out points. The home range size varies from 30 to 120 km<sup>2</sup>, averaging 50 km<sup>2</sup> and is determined by prey density, topography and the availability of nest-sites. A clutch of 1–3 eggs is laid in March–April and the young fledge from the beginning of July (*Red Data Birds*). By about 15 days old, the young begin to develop their primaries and have their second coat of down which is long, coarse and creamy-white. The fledging period is about 65–70 days, but the chicks may fledge from the age of 50 days onwards, by which time they have many brown adult feathers. The female stays with the young for up to about 40 days.

### Breeding season survey – population

This survey method is based on the instructions for the 1992 national golden eagle survey (Green 1996).

#### Information required

- number of occupied home ranges
- a map showing the survey area boundary and all eagle registrations.

### **Number and timing of visits**

As many visits as are required to confirm occupancy of the home range, between January and early April.

### **Time of day**

Any time of day.

### **Weather constraints**

Wherever possible make visits in good weather, but do not cancel visits because of poor weather, except when this is so extreme as to be hazardous to personal safety.

### **Sites/areas to visit**

Any site known to have a previous history of golden eagle nesting. Ledges and hollows on rock faces.

### **Equipment**

- 1:25,000 OS map of the survey area
- telescope (optional)
- Schedule 1 licence.

### **Safety reminders**

Always carry a compass and ensure that someone knows where you are going and when you are due back. Carry spare warm clothing, a plastic survival bag, whistle, first-aid kit and food supplies. If possible, surveyors should not work alone in more remote upland areas.

### **Disturbance**

During laying or incubation, keep disturbance to an absolute minimum. If you make visits during this time, observe the nest-site from a discreet distance. No visits to nests are necessary to confirm home range occupancy. Egg-collectors are a serious threat to this species.

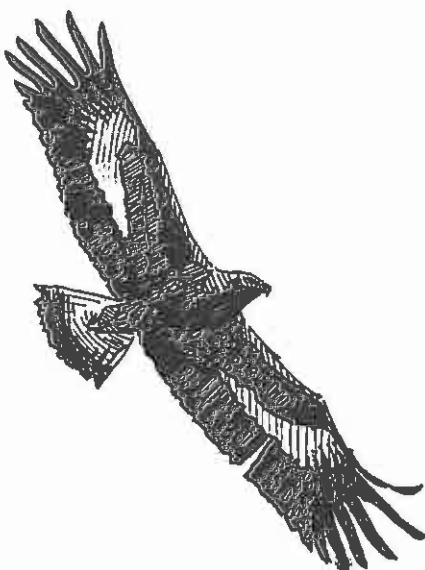
### **Methods**

This is a difficult bird to survey. Despite their size, golden eagles can be quite elusive, breeding in fairly inaccessible mountainous habitat where the weather is frequently poor. Also, their use of widely distributed alternative eyries can make locating the actual breeding site difficult.

Use past information on breeding sites as much as possible. Raptor Study Groups regularly monitor many sites; if you have not been in contact with them already, do so before starting fieldwork.

Mark the boundary of the survey area on a map. On initial visits (in January) find all those areas that might be potential nest-sites and mark them on the map. You can exclude from the survey any other areas not suitable as hunting grounds (eg dense forest, plantations, populated areas) and mark them on the survey map as such. More experienced observers and observers with good information on the likely location of eagles may be able to concentrate on particular sites and cover much less ground.

Early visits are a good time to find displaying golden eagles, to record the presence of immature birds and to record nest-building activities. There are usually several alternative eyries within a home range, but as nest building progresses it should become more obvious which site will be used for breeding. Usually a deep, thickly lined bowl signifies that a hen will lay, and usually in that nest. However, it is possible to have



several well constructed nests within one home range, and females (especially young females) may lay eggs in a poorly constructed nest (Watson et al 1989).

On subsequent visits (January to early March) work out a route that ensures that you visit all potential nest-sites (scanned with binoculars or telescope, no need for rock climbing) and that you have approached all suitable hunting areas to within 500 m. It should be possible to cover about 2 km<sup>2</sup> in one day, depending on the accessibility of the area.

If you do not see two golden eagles together during visits to the survey area until late March, visit potential eyries (late March or April) to locate an incubating bird. Always approach these areas with caution at this time and only watch from a discreet distance so that eagles are not flushed early in incubation.

Proof of occupancy of a home range by a pair requires that you either see two eagles together or witness incubation by one of the adults (usually the female).

Record registrations of any other eagle activity on each visit. Mark eagle registrations on a map, using standard BTO notation (Appendix 1). Use a new map for each visit. Even if you do not see any eagles, note the location of any evidence of their presence, such as fresh pellets, moulted feathers or fresh food remains in an eyrie.

Report whether home range occupancy was confirmed and how. Provide a summary map of the survey area, showing eagle registrations, eyrie and alternatives. If you are not able to confirm occupancy, report all eagle registrations and evidence of eagle presence on a summary map with additional explanatory notes if necessary.

## **Breeding season survey – breeding success and productivity**

### **Information required**

- confirmation of fledged young (number fledged if possible).

### **Number and timing of visits**

Two, one in mid-June and one in late June/early July.

### **Time of day**

Any time of day.

### **Weather constraints**

Avoid poor weather conditions.

### **Sites/areas to visit**

Sites where the home range and the nest-site have been confirmed.

### **Equipment**

- telescope
- Schedule 1 licence.



**Safety reminders**

As for the population survey (above).

**Disturbance**

Be discreet during your observations. Nest visits are not necessary to determine if there are any chicks in the eyrie. Do not loiter if the adult is still brooding the young. Keep the location of the nest confidential.

**Methods**

Make the first visit in mid-June to check on the progress of any young. Do not go near the nest-site if an adult is still brooding: leave, and return a week later.

If young are present, note their progress. If they are near to fledging stage (about 50 days old) no further visits are necessary. If they are still downy, make another visit at the end of June/beginning of July. When observing the nest-site and trying to ascertain the number of young, it may be necessary to wait until one of the adults brings food to the nest and feeds the young before a clearer view is possible. This may mean observing for several hours. If this is not possible, just state what you saw.

**References**

- Green, R E (1996) The status of the golden eagle in Britain in 1992. *Bird Study* 43: 20–27.
- Watson A, Payne, S and Rae, R (1989) Golden eagles *Aquila chrysaetos*: land use and food in northeast Scotland. *Ibis* 131: 336–348.